



National Aeronautics
and Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899

ENVIRONMENTAL NEWSLETTER

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Banana Creek Culvert Replacement

KSC has recently let a contract to replace the culvert beneath Kennedy Parkway north where the roadway meets Banana Creek. This site is known to many tourists and KSC employees as a possible sighting area for manatees and alligators. Basically, the contract is for the replacement of the existing metal culvert, circa 1962, with a concrete box culvert. The culvert area will be blocked during several weeks for construction. The discriminating feature of this project is the fact that the culvert is a passageway for manatees. The manatees regularly swim through the culvert to reach and exit the water in the north Banana Creek. During cold weather the manatees will leave this area to reach warm water. To prevent a possible accidental "taking" of a manatee due to the animal's inability to gain access to warm water during blockage of the culvert area, KSC has taken precautions.



A secured gate was placed on the west entrance to the culvert area after it was determined no manatees were in the area. This determination was made during aerial surveys. Unfortunately, the wind and rising water generated from Hurricane Erin pushed open the gate. Manatees have been moving through the culverted area, with the latest sighting of three (3) during the past few weeks. Attempts have been made to watch for manatees entering the culverted area so that the repaired gate can be opened to release the animals. However, KSC has not been lucky in their attempts. The contract has been placed on hold until KSC is sure the area has been cleared of manatees, which may occur only after the first cold spell.

This project is an example of the unique challenges of working on a wildlife refuge.

West Indian Manatee

The West Indian Manatee has been listed as an endangered species since 1972. All members of the order to which it belongs (Sirenia) are either threatened* or endangered*. Manatees are basically a riverine species in Florida although they are occasionally seen along the oceanside beaches. Manatees have wide-ranging migratory habits. They are found throughout Florida and southeastern Georgia and on rare occasions along coastal states further north and west. Manatees can be found on KSC year round with the exception of the very coldest periods.

The general trend in abundance at KSC is described by two peaks: one sharp peak in spring which drops off by summer followed by another slight increase in the fall. The abundance and distribution patterns on KSC have not been static over the last 13 years of monitoring. A five-fold increase in manatees using KSC waters in spring has been documented. The spring peak in recent years has included over 300 manatees in the KSC boundaries of the Banana River.

The increased numbers of manatees appear to reflect the changes in the estuary outside KSC where the habitats are being more rapidly affected by human activities. It is likely that the increases at KSC represent a shift away from previously used areas outside the property. Statewide mortalities of manatees have increased alarmingly. Good quality habitat outside of KSC has been severely marred by human development, and boating activities have been a major cause of direct mortality.

All open waters on KSC with depths in excess of one meter are potential habitat for these marine mammals, but large aggregations of manatees are generally found where extensive seagrass beds are bordered by deep basins. Freshwater sources often attract manatees and some researchers believe freshwater to be a requirement. The animals are

frequently found in the vicinity of Hangar AF boat basin where the Solid Rocket Booster retriever ships are docked. Another location often used by large numbers of manatees, particularly during the spring, is just north of NASA Causeway. The waters just west of the Air Force rocket vehicle assembly buildings are frequented by manatees during this period as well. Pepper Flats, located at the northern terminus of the Banana River near the Crawlerway and the entrance to the VAB turning basin, is an area traditionally used by

manatees and is still popular at the time of this writing.

**ENDANGERED:* Species in danger of extinction if the deleterious factors affecting their populations continue to operate.

**THREATENED:* Species that are likely to become endangered in the foreseeable future if current trends continue.

KSC Cat Program

Feral cats are the wild offspring of domestic cats. They can be found in alleys, parks, abandoned buildings and rural areas. They are elusive and do not trust humans. The most effective and humane method for dealing with the feral cats is population control. The recommended population control is the trap, sterilize and release method.

KSC is implementing a Feral Cat Program. NASA's senior management has demonstrated their support by sponsoring and attending this month's meeting in the KSC Headquarters Building 4th Floor Conference Room. The plan that has been agreed to by everyone involved thus far is to relocate the feral cats. The plan involves trapping the feral cats in the KSC Industrial Area, transporting them to local veterinarians for neutering or spaying and vaccinations, then relocating them to the L5-683 Building. L5-683 is an abandoned building at the far southwest end of Schwartz Road, remote from any KSC activities. It will be used to confine the cats until they accept their new location. It will also provide cover and safe refuge for them later when they no longer need to be confined.

For a relocation program to be successful, it is essential to confine the cats in their new location until

they become used to it as "home. The confinement period lasts from 2 to 6 weeks, and the cats need to be fed twice a day during that period. Feeders need to spend a little time talking to the cats each time they feed them so the cats can get used to them. Handling the cats is discouraged.

Ten areas that need further work were identified at the meeting: 1) facility renovation, 2) trapping, 3) veterinarians, neutering and spaying, 4) kittens and adoptions, 5) tracking, 6) feeding, 7) publicity and fundraising, 8) facility maintenance, 9) care for injured or sick cats, and 10) rabies vaccinations for volunteers (if they are required).

NASA's Biomedical Office has prepared a release form in which all volunteers are required to sign in case they come in contact with the cats such as trapping, transporting, feeding, etc.

Donations will be handled by establishing an account at the KSC Credit Union. If you would like to assist in this program in any of the above mentioned areas, please contact **Lisa Fowler, PA-MSB** or **Paula Shawa, SHER-10**.

This newsletter was written and produced by the NASA/KSC Environmental Management Office. All comments or questions may be made by calling (407) 867-4049 or by writing to the following address:

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